

Name _____

Unit 2.1 Exam

AP Biology

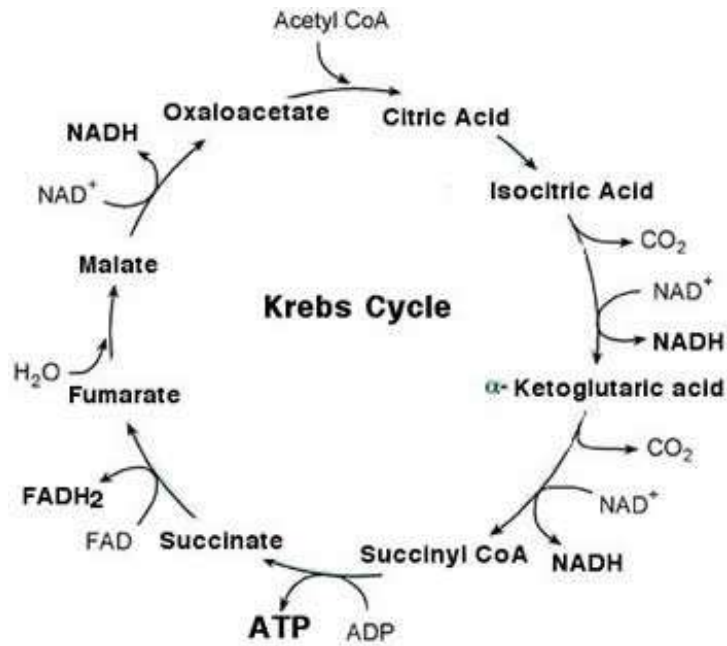
2017 - 2018

This exam will be returned to you so be sure to annotate it while testing so you can understand any misconceptions when it is returned to you for review.

There are 7 multiple choice questions and 1 free response question.

The exam must be completed within the class period

Refer to the diagram below to answer questions 1-4



1. The mechanism of ATP production during the Krebs cycle differs from the mechanism of ATP production during photosynthesis. Which of the following correctly describes a difference?

- a. Light powers chemiosmosis in photosynthesis.
- b. Light powers the electron transport chain in photosynthesis.
- c. ATP is made by oxidative phosphorylation in the Krebs cycle but by photophosphorylation in photosynthesis.
- d. ATP is made by photophosphorylation in the Krebs cycle but by oxidative phosphorylation in photosynthesis.

2. Which type of reaction best describes the conversion of Malate to Oxaloacetate?

- a. Malate is oxidized
- b. Malate is reduced
- c. Malate oxidizes NAD⁺
- d. Malate reduces NADH

3. A virus specific to only herbivore animals inhibits the enzyme catalyzing the conversion of citric acid to isocitric acid is introduced to a community. Which of the following best predicts the effects on the plant community?

- a. The productivity of plants would likely decrease.
- b. The productivity of plants would be likely unaffected.
- c. The productivity of plants would stop completely.
- d. The productivity of plants would likely increase.

4. Which reaction is in agreement with the laws of thermodynamics?

- a. The conversion of Succinyl CoA to Succinate must have a decrease in entropy and an increase in enthalpy.
- b. The conversion of Succinyl CoA to Succinate must have an increase in entropy and a decrease in enthalpy.
- c. The conversion of Succinyl CoA to Succinate must have a decrease in entropy and a decrease in enthalpy.
- d. The conversion of Succinyl CoA to Succinate must have an increase in entropy and an increase in enthalpy.

5. If you measured aerobic respiration in a bacterium and an animal, which is a valid experimental question that could be addressed concerning their differences?

- a. Will the amount of light affect their respiration differently?
- b. Could you detect the amount of carbon dioxide released?
- c. Is there a difference in their ATP production efficiency due to process location?
- d. Will there be a change in aerobic respiration if oxygen is depleted?

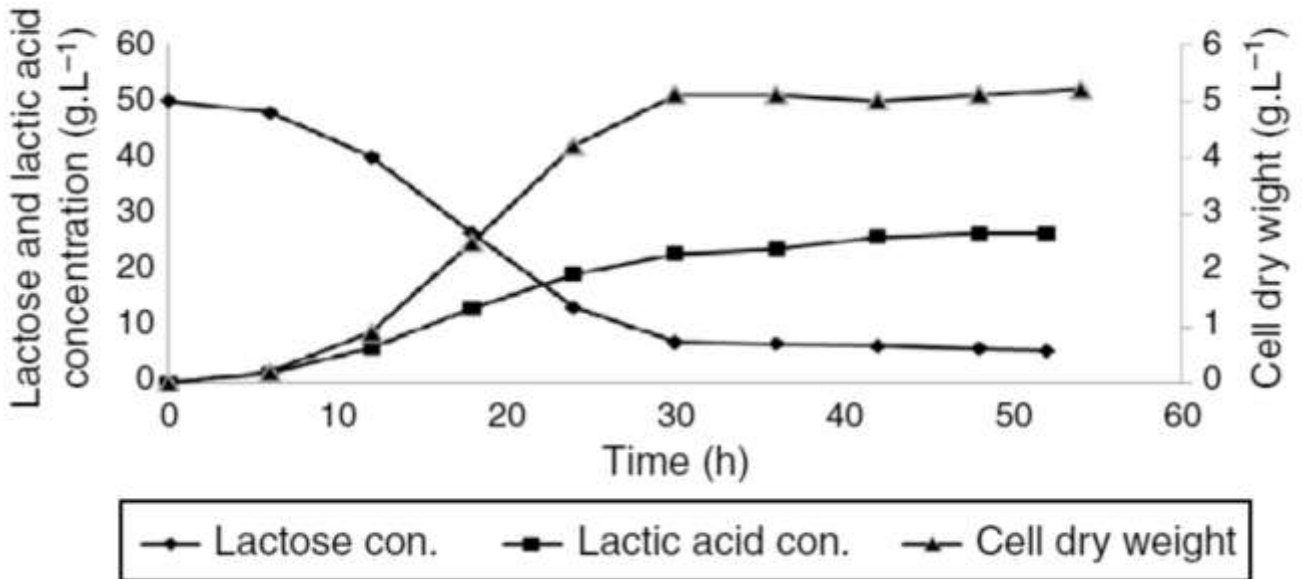
6. A photosynthetic organism is sampled for various chemicals. Their concentration of the enzyme rubisco is measured and found to be lower than usual. What direct result is most likely based on this finding?

- a. The amount of light absorbed will be lower than usual.
- b. The amount of ATP produced will be greater than usual.
- c. The amount of carbon fixed will be less than usual.
- d. The amount of NADPH produced will be less than usual.

7. Which strategy does not represent a photosynthetic adaptation?

- a. Having a variety of pigments to increase energy absorption.
- b. CAM plants opening stomata only at night to increase water output.
- c. C4 plants fixing carbon in an alternate location in the leaf to prevent water loss.
- d. Using cyclic electron flow to produce extra ATP when needed.

Free Response



The figure above shows Lactose concentration, Lactic acid concentration and the dry weight of *Lactobacillus delbrueckii*, a bacterial species important for its pathogen destroying ability in human digestive tracts. Lactose is a sugar similar to glucose used in the metabolic pathways of *L. delbrueckii*.

- Lactose contains 1,372 kcal/mol. and there are 342.3 grams per 1 mol of lactose. **Calculate** how many kcal will be available from lactose At 24 hours.
- Identify & explain** the mechanism of ATP production used in the lactic acid producing pathway.
- Explain** the relationship between the trends in lactose concentration & cell weight.
- Predict** how the pH in these metabolically active bacterial cells would be different than the stroma of metabolically active plant cells. **Justify** your prediction.